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CNY17-1X, CNY17-2X, CNY17-3X, CNY17-4X, CNY17-5X
CNY17-1, CNY17-2, CNY17-3, CNY17-4, CNY17-5

OPTICALLY COUPLED ISOLATOR PHOTOTRANSISTOR OUTPUT

Jameco Part Number
160434

APPROVALS

- UL recognised, File No. E91231

'X' SPECIFICATION APPROVALS

- VDE 0884 in 3 available lead forms : -
  - STD
  - G form
  - SMD approved to CECC 00802
- Certified to EN60950 by the following Test Bodies :-
  Nemko - Certificate No. P96101299
  Fimko - Registration No. 190469-01..22
  Semko - Reference No. 9620076 01
  Demko - Reference No. 305567

DESCRIPTION

The CNY17-1, CNY17-2, CNY17-3, CNY17-4, CNY17-5 series of optically coupled isolators consist of an infrared light emitting diode and a NPN silicon photo transistor in a standard 6 pin dual in line plastic package.

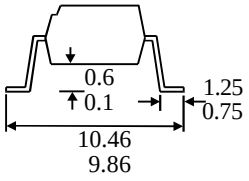
FEATURES

- Options :-
  10mm lead spread - add G after part no.
  Surface mount - add SM after part no.
  Tape&reel - add SMT&R after part no.
- High BV_{CEO} (70V min)
- High Isolation Voltage ($5.3kV_{RMS}$, $7.5kV_{PK}$)
- All electrical parameters 100% tested
- Custom electrical selections available

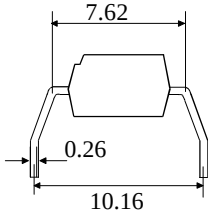
APPLICATIONS

- DC motor controllers
- Industrial systems controllers
- Measuring instruments
- Signal transmission between systems of different potentials and impedances

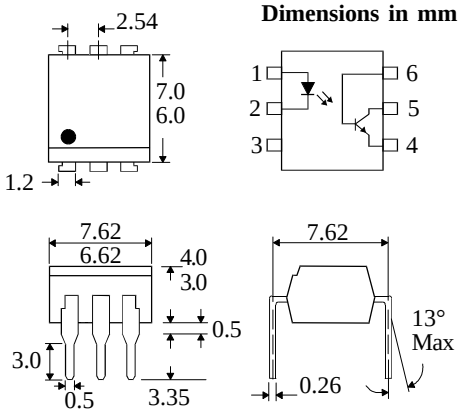
OPTION SM
SURFACE MOUNT



OPTION G



Dimensions in mm



ABSOLUTE MAXIMUM RATINGS
(25°C unless otherwise specified)

Storage Temperature	-55°C to + 150°C
Operating Temperature	-55°C to + 100°C
Lead Soldering Temperature (1/16 inch (1.6mm) from case for 10 secs)	260°C

INPUT DIODE

Forward Current	60mA
Reverse Voltage	6V
Power Dissipation	105mW

OUTPUT TRANSISTOR

Collector-emitter Voltage BV_{CEO}	70V
Collector-base Voltage BV_{CBO}	70V
Emitter-collector Voltage BV_{ECO}	6V
Power Dissipation	160mW

POWER DISSIPATION

Total Power Dissipation	200mW
(derate linearly 2.67mW/°C above 25°C)	

ELECTRICAL CHARACTERISTICS (T_A= 25°C Unless otherwise noted)

PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage (V_F)		1.2	1.65	V	I_F = 60mA
	Reverse Voltage (V_R)	6			V	I_R = 10µA
	Reverse Current (I_R)			10	µA	V_R = 6V
Output	Collector-emitter Breakdown (BV_{CEO})	70			V	I_C = 1mA (Note 2)
	Collector-base Breakdown (BV_{CBO})	70			V	I_C = 100µA
	Emitter-collector Breakdown (BV_{ECO})	6			V	I_E = 100µA
	Collector-emitter Dark Current (I_{CEO})			50	nA	V_{CE} = 10V
Coupled	Current Transfer Ratio (CTR) (Note 2)					
	CNY17-1	40		80	%	10mA I_F, 5V V_{CE}
	CNY17-2	63		125	%	10mA I_F, 5V V_{CE}
	CNY17-3	100		200	%	10mA I_F, 5V V_{CE}
	CNY17-4	160		320	%	10mA I_F, 5V V_{CE}
	CNY17-5	200		400	%	10mA I_F, 5V V_{CE}
	CNY17-1	13			%	1mA I_F, 5V V_{CE}
	CNY17-2	22			%	1mA I_F, 5V V_{CE}
	CNY17-3	34			%	1mA I_F, 5V V_{CE}
	CNY17-4	56			%	1mA I_F, 5V V_{CE}
	CNY17-5	68			%	1mA I_F, 5V V_{CE}
	Collector-emitter Saturation Voltage $V_{CE(SAT)}$			0.4	V	10mA I_F, 2.5mA
	Input to Output Isolation Voltage V_{ISO}	5300			V_{RMS}	See note 1
		7500			V_{PK}	See note 1
	Input-output Isolation Resistance R_{ISO}	$5x10^{10}$			Ω	V_{IO} = 500V (note 1)

Note 1 Measured with input leads shorted together and output leads shorted together.
Note 2 Special Selections are available on request. Please consult the factory.

SWITCHING CHARACTERISTICS

1. Linear Operation (without saturation) Fig 1.
I_F = 10mA, V_{CC} = 5V, R_L = 75Ω

		UNITS
Turn-on Time t_{on}	3.0	µs
Rise Time t_r	2.0	µs
Turn-off Time t_{off}	2.3	µs
Fall Time t_f	2.0	µs
Cut-off Frequency F_{CO}	250	kHz

2. Switching Operation (with saturation) Fig 2
V_{CC} = 5V, R_L = 1kΩ

GROUP	-1 (I_F=20mA)	-2 and -3 (I_F=10mA)	- 4 (I_F=5mA)	UNITS
Turn-on Time t_{on}	3.0	4.2	6.0	µs
Rise Time t_r	2.0	3.0	4.6	µs
Turn-off Time t_{off}	18	23	25	µs
Fall Time t_f	11	14	15	µs
V_{CESAT}	≤ 0.4			V

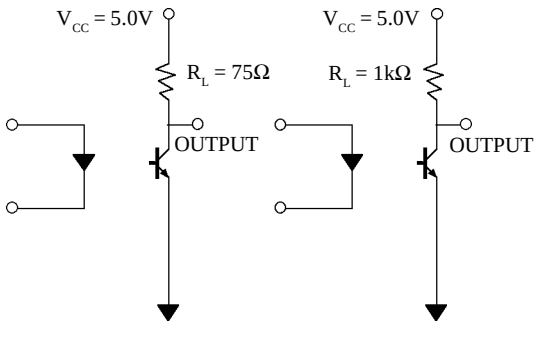
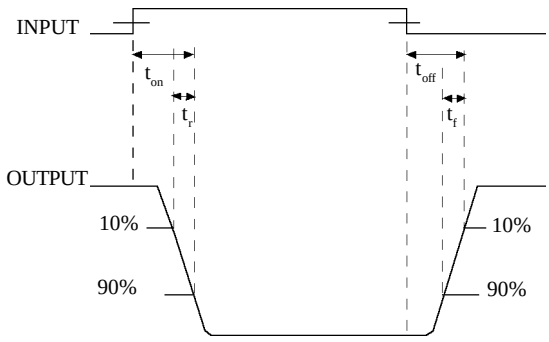
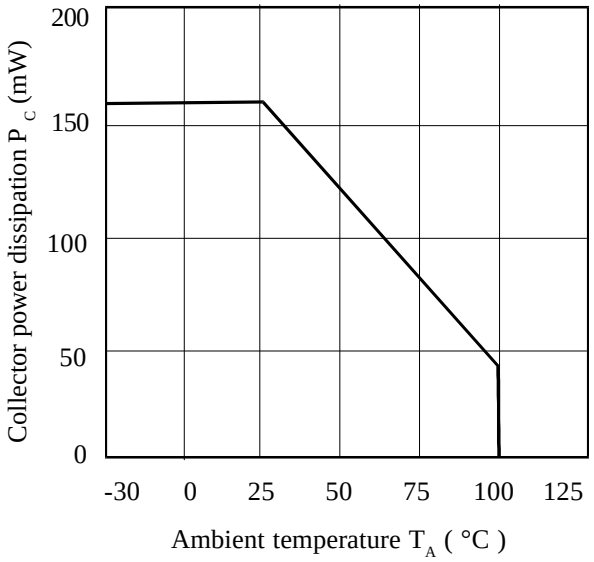


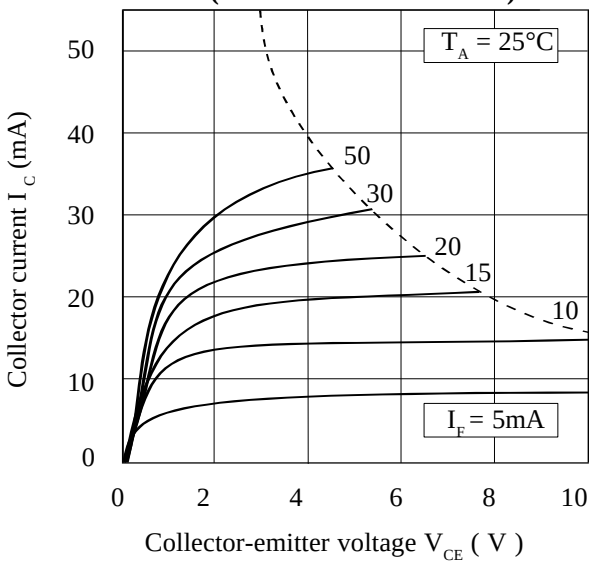
FIG 1 FIG 2



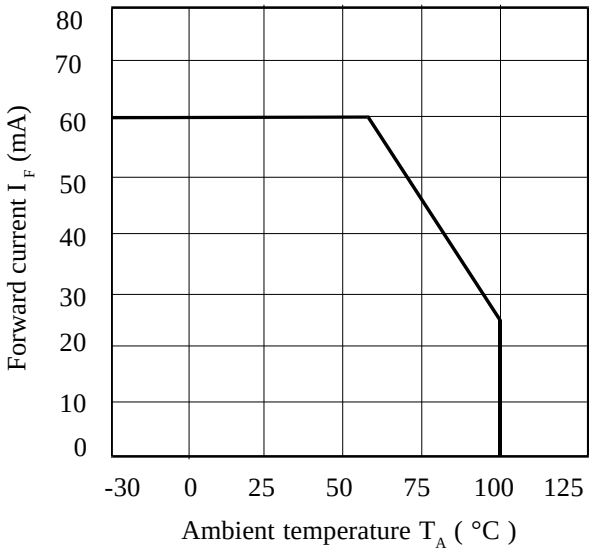
Collector Power Dissipation vs. Ambient Temperature



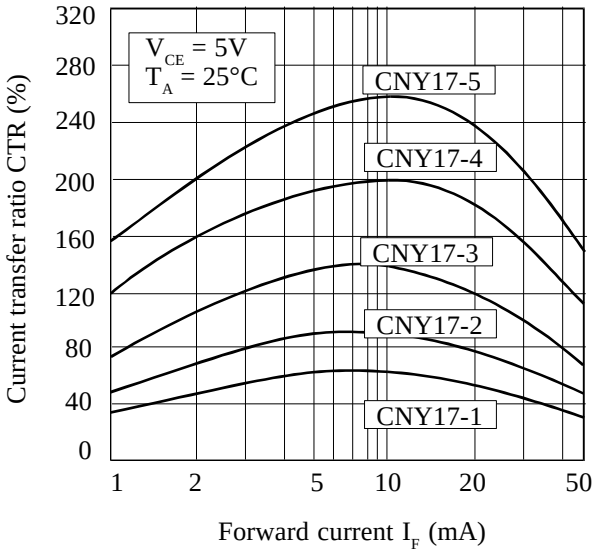
Collector Current vs. Collector-emitter Voltage (normalised to CNY17-3)



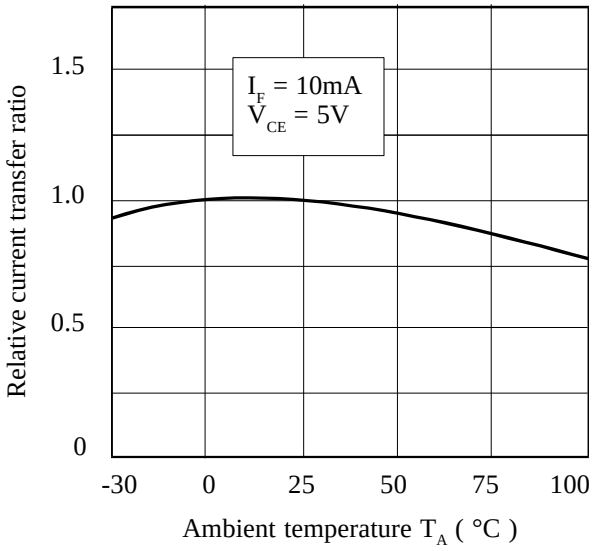
Forward Current vs. Ambient Temperature



Current Transfer Ratio vs. Forward Current



Relative Current Transfer Ratio vs. Ambient Temperature



Collector-emitter Saturation Voltage vs. Ambient Temperature